Commonwealth of Pennsylvania
DEPARTMENT OF PUBLIC INSTRUCTION
Harrisburg

Manual of Instruction

ldg.

COURSE 6

INCREASING MILK PRODUCTION

Rural War Production Training Program

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P38ma
no.6

Prepared under the authority of the State Board for Vocational Education by the Department of Rural Education, The Pennsylvania State College

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PREFACE

Course 6, Increasing Milk Production, is one of a series of courses which have been prepared in the "Food for Victory" program. The objective has been to set forth in brief form the phases of dairying considered pertinent to the immediate problem of Increasing Milk Production in Pennsylvania.

I. Suggested Course Calendar
II. Introduction
III. Suggested Lesson Outlines
IV. Suggested Reference Material
    Books (A)
    Bulletins and Circulars (B)
    Visual Aids (C)
V. Suggested Approved Practices Which Should Develop From The Course

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Special recognition is given Professors A. A. Borland, and A. L. Beam, of the Department of Dairy Husbandry, The Pennsylvania State College, for invaluable assistance and guidance in setting up the suggested lesson outlines and in deciding upon the most current references pertinent to Increasing Milk Production.

I. SUGGESTED COURSE CALENDAR

Lesson Number	Name of Job	Date of Meeting
1	The Dairy Farming Industry and the War	
2	Determining the Food Requirements of Dairy Cows	
3	Preparing and Balancing a Desirable Ration for Dairy Cows	
4	Feeding Dairy Cows	
5	Providing and Maintaining Satisfactory Pastures	
6	Improving the Dairy Herd Through Breeding	
7	Raising Dairy Calves for Herd Replacements	
8	Controlling and Preventing Diseases and Parasites	
9	Producing Clean Milk	
10	Care and Management of the Dairy Herd	

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II. INTRODUCTION

This manual was prepared as a guide to teachers and supervisors in conducting instruction with young and adult farmers in the OSYA "Food for Victory" program. It is designed to facilitate more effective preparation by the teachers undertaking to meet the emergency need through commodity courses.

The ten (10) suggested lesson topics or jobs were selected after careful analysis of the whole field of milk production, in conference with Professors A. A. Borland and A. L. Beam. The lesson outlines are purely suggestive and it is expected that each lesson will be modified to meet local conditions.

In many instances jobs other than the ten included herein will be considered important enough in certain sections of the commonwealth to be included along with, or instead of, some of those listed. It is expected also that more than one meeting will be necessary to give satisfactory instruction in some jobs.

The aims and the problems for study and discussion set up in each of the ten lesson outlines are considered applicable to the respective jobs but they are by no means considered all-inclusive. If any or all of the suggested problems for study and discussion are incorporated into a similar course of study the suggested references will be found helpful to the busy teacher. They are offered for the express purpose of bringing teacher efficiency to its best.

The reference materials suggested on pp. 17-19 are considered pertinent to the immediate problem of Increasing Milk Production. It is advised that at least one copy of each should be available for easy reference. It is assumed that a variety of references pertinent to Increasing Milk Production will be on hand in every school. They will probably include texts, bulletins, charts, film strips and others, and they may furnish a large part of the reference material needed. It is important however, to use the most current references for approved practices in meeting emergency problems. The bulletins of The Pennsylvania Experiment Station are prepared for Pennsylvania conditions and they generally are the most reliable sources available.

For the convenience of the teacher, the suggested reference materials on pp. 17-19, are given by key designation as follows: Books, (A); Bulletins and Circulars, (B); and Visual Aids, (C). In preparing a lesson on any one job, the teacher will find specific references to the different problems suggested. For example: (1), if the reference is A-1, p. 7, it refers to material on page 7 of the first book listed, and the material to be found there is considered pertinent to the problem suggested; (2), if the reference is B-29,

it refers to bulletin No. 29 on the list and implies that the content of the entire bulletin is pertinent to the problem; (3), if C-6 is given as a reference it will refer to item No. 6 in the Visual Aids list.

The suggested approved practices which should develop from the course are set forth on p. 20 as guides to the teacher. During each lesson certain conclusions should be reached which should result in the adoption of approved practices by individual farmers. These will constitute the basis for the program of follow-up instruction.

Teachers who plan to organize and conduct a course in Increasing Milk Production are urged to follow the suggestions given in another manual of instruction in this series entitled, "Suggestions To Teachers and Supervisors For The Development and Conduct of Agricultural Commodity Courses."[1]

The suggestions set forth in that manual were prepared for the purpose of aiding individuals in organizing and conducting Agricultural Commodity Courses in the Rural War Production Training program. The manual includes the following sections:

I. Objectives of Courses in the Increased Production of Farm Commodities.
II. Things To Do Before Organizing a Commodity Course.
III. Form for Surveying Out-of-School Rural and Non-Rural Persons.
IV. Suggested Teacher Preparation.
V. A Suggested Teaching Plan for Using the Conference Procedure.
VI. The Importance of Current References.
VII. Providing Follow-up of Instruction.

[1] Rural War Production, State Department of Public Instruction, Harrisburg, Pa.

III. SUGGESTED LESSON OUTLINES

JOB 1. THE DAIRY FARMING INDUSTRY AND THE WAR

A. Teaching aims—
   1. To develop ability to meet the demands of this country and the United Nations for increasing quantities of dairy products.
   2. To gain an appreciation of the value of the dairy cow as a converter of home-grown grains and roughages into valuable food for men.

B. References for this lesson—(see key list on pp. 17-19)
   1. (A)—5
   2. (B)—8, 38, 44, 45, 52, 54
   3. (C)—10

C. Suggested problems for study and discussion
   1. The need for increased milk production. B-38, p. 1; B-52
   2. The dairy industry in the United States. B-38, p. 3; C-10; B-44; B-45
      a. Cow population and value
      b. Consumption of dairy products
   3. The dairy industry in Pennsylvania. B-38, p. 4; B-8; B-54.
      a. Cow population and value
   4. The grain and hay situation in Pennsylvania. B-38, p. 5
   5. The relation of dairying to soil fertility. B-38, p. 6; A-5, p. 8
      a. Importance of marketing crops through livestock
      b. Importance of dairy farming on fertile land
         (1) Good farm homes
         (2) Well-kept farm buildings
         (3) Improved livestock
         (4) Progressive community
   6. Dairying is a permanent industry—a year round job. A-5, p. 7
   7. Cow prices and probable trend.
   8. Milk prices and probable trend
   9. The labor situation and probable trend.
   10. Adjustments needed to meet changing situations.
   11. Financing the dairy enterprise.
      a. Secure credit and credit information from
         (1) The local bank
         (2) The production credit association
         (3) The farm security administration

JOB 2. DETERMINING THE FOOD REQUIREMENTS OF DAIRY COWS

A. Teaching aims—To develop the ability of the farmer

1. To determine the food requirements of dairy cows.
2. To determine the amount of feed necessary for economic milk production.
3. To determine the importance of feeding a balanced ration.

B. References for this lesson—(see key list on pp. 17-19)

1. (A)—1
2. (B)—1, 2, 4
3. (C)

C. Suggested problems for study and discussion.

1. Determining the uses to which the dairy cow puts her feed. B-2, p. 1
   a. Maintenance
   b. Milk production
   c. Growth
   d. Development of the fetus.
2. Determining the amount of food required. A-1, p. 570; B-4;
3. Determining the functions of the various feed constituents. B-2, p. 2
4. Why feed a balanced ration? B-1, p. 8

JOB 3. PREPARING AND BALANCING A DESIRABLE RATION FOR DAIRY COWS

A. Teaching aims—To develop the ability of the farmer
   1. To balance an economical ration.
   2. To mix and prepare rations.
   3. To identify common feed stuffs.

B. References for this lesson—(see key list on pp. 17-19)
   1. (A)—1, 2, 3
   2. (B)—2, 3
   3. (C)—8

C. Suggested problems for study and discussion
   1. Considering the characteristics of an ideal ration. A-3, pp. 142-148
   2. Considering the characteristics of the various feeds. B-2, p. 7; A-2, Ch. 25; C-8.
   3. Calculating the relative nutritive value of the different feeds. B-2, p. 18; A-3, pp. 154-160
   4. Preparing the grain ration. B-2, p. 23; A-2, Appendix Table III, p. 1004; A-2, Appendix Table VII, pp. 1015-1019
   5. Determining the nutrient requirements of feed stuffs and supplemental rations necessary to balance a ration with the home-grown grains and roughages. A-2, pp. 491-498; A-2, Ch. 25; A-1, p. 592
   6. Considering the available roughages—kind, amount, quality
   7. Considering the available grains—kind, amount, quality
   8. Considering the available silages—kind, amount, quality
   9. Considering the available pastures—kind, amount, quality
   10. Consider the availability and cost of feed stuffs and supplemental rations needed. A-1, p. 589
   11. Select the feed stuffs and supplemental rations needed. A-2, Ch. 10; A-2, Ch. 25; B-3
   12. Select the feed stuffs and supplemental rations needed on the basis of:
      a. Quantity of protein. A-2, p. 488
      b. Quality of protein. A-2, p. 493
      c. Total digestible nutrients. A-2, p. 495
      d. Cost of total digestible nutrients. A-2, p. 193

JOB 4. FEEDING DAIRY COWS

A. Teaching aims—To develop the ability of the farmer

1. To feed dairy cows in accordance with their individual requirements.
2. To use home-grown grains and roughages most efficiently.
3. To determine the kinds and amounts of supplements necessary to purchase.
4. To feed a balanced ration.

B. References for this lesson—(see key list on pp. 17-19)

1. (A)—1, 2, 3, 5
2. (B)—1, 2, 3, 5, 6, 7, 41, 51
3. (C)—17

C. Suggested problems for study and discussion

1. Kinds and quantities of feeds to use. B-2, p. 26
   a. Summer feeding. B-2, p. 27
   b. Winter feeding. B-2, p. 28
2. Adjusting the amounts of concentrates for each cow to her actual production. A-2, pp. 486-488; A-1, p. 649; B-41
3. Guide to proportions and amounts of concentrates and roughages for dairy cows. A-2, p. 1001; A-2, p. 549; B-1, pp. 10-12; B-3
4. Providing an ample quantity of minerals. A-3, pp. 164-169; B-1, p. 7; B-6; B-7
5. Providing vitamins. A-1, p. 668; C-17
6. Salt is needed in the diet. B-1, p. 7
7. Silage makes ideal succulence. B-5; B-51
8. Water is essential for economic production. B-1, p. 2; A-5, p. 328
9. Luxuriant pasture furnishes unexcelled feed for dairy cows. A-2, p. 553

JOB 5. PROVIDING AND MAINTAINING SATISFACTORY PASTURES

A. Teaching aims—To develop the ability of the farmer
   1. To provide good pasture, economically.
   2. To establish, to improve, and to maintain pastures.

B. References for this lesson—(see key list on pp. 17-19)
   1. (A)—1, 2, 9, 10
   2. (B)—9, 10, 43, 46, 47, 48, 49, 50
   3. (C)—12, 13

C. Suggested problems for study and discussion—
   1. Economic importance and major use of pastures. B-43; B-47; B-50; C-12; A-1, p. 929; A-1, p. 87; A-1, p. 1060; A-2, p. 209
      a. Kinds of pastures. A-1, p. 930
      b. Grazing methods. A-1, p. 932
      c. Nutritive values. A-1, p. 935
   2. Management practices for pastures. B-43
      a. Choice of grasses and legumes. A-1, p. 935
      b. Use of fertilizers. A-1, p. 936; A-2, p. 211; B-48; B-49
      c. Grazing practices. A-1, p. 938; A-2, p. 212
   3. Importance of pasture improvement. A-2, p. 209; B-43; C-13
      a. Liming)
      b. Fertilizing)
      c. Manuring) B-9; B-46
      d. Seeding)
   4. Establishing and maintaining pastures. B-10; B-43
      a. Pasture mixtures. A-9, p. 446; B-10; A-9, pp. 477-485
      b. Pasture management. A-9, pp. 485-489; A-10, pp. 77-79

JOB 6. IMPROVING THE DAIRY HERD THROUGH BREEDING

A. Teaching aims—

1. To develop the ability of the farmer to carry on a systematic breeding program.
2. To have the farmer recognize the value of high producing cows.
3. To have the farmer recognize the value of a good sire in the breeding plan.
4. To develop the ability of the farmer to improve his dairy herd.

B. References for this lesson—(see key list on pp. 17-19)

1. (A)—2, 3, 4, 5, 8
2. (B)—11, 12, 13, 14, 15, 16, 20, 40
3. (C)—1, 4, 9, 19, 20

C. Suggested problems for study and discussion—

1. Building a profitable herd. A-2, p. 484
2. Study the sire problem. A-3, p. 126; C-1; A-8, p. 1066; B-11; A-5, pp. 151-170; B-40
3. Care and management of the dairy bull. B-20; A-5, pp. 169-174
4. Plan your breeding program. A-3, p. 137; B-12; A-8, pp. 997-1069; C-9
5. Select the class of cattle best suited to a dairy enterprise. A-3, p. 18; B-15
6. Determine how selection helps the breeder. A-3, p. 114; B-14; C-4
7. Join a cow testing association in order to determine the truth about the productive ability of each member of the herd. A-4, p. 373; B-13
8. Weed out low-producing, unprofitable cows. A-2, p. 482
9. Choose the most profitable cows. A-3, p. 21; B-16; A-2, p. 479; A-2, p. 480
10. Study the economy of high production. A-3, p. 26

JOB 7. RAISING DAIRY CALVES FOR HERD REPLACEMENTS

A. Teaching aims—To develop the ability of the farmer

1. To provide dairy herd replacements economically.
2. To feed growing stock for proper development.

B. References for this lesson—(see key list on pp. 17-19)

1. (A)—1, 2, 3, 4, 5
2. (B)—17, 18, 19, 56
3. (C)—2, 17

C. Suggested problems for study and discussion—

1. Determining the desirability of raising heifers from the best cows in the herd, bred to a desirable bull. A-4, p. 271
2. Importance of raising good heifers well. B-17; B-18; B-19
3. Nutrient requirements of growing stock. A-2, p. 590; A-1, p. 597
   a. Amount of protein required. A-2, p. 590
   b. Quality of protein required. A-2, p. 591
   c. Total digestible nutrients. A-2, p. 591
   d. Mineral requirements. A-2, p. 592; A-3, p. 279
   e. Vitamin requirements. A-2, p. 593; A-3, p. 279; B-18, p. 11; C-17
4. Importance of water for calves. A-2, p. 595; B-18, p. 12
5. Caring for the new born calf. A-2, p. 596; A-3, p. 257; B-18, p. 4
6. Various methods of raising calves. A-2, p. 597; B-18, p. 6; C-2.
7. Starting a calf on whole milk. A-2, p. 596; A-3, p. 257; B-18, p. 4
8. Raising calves on skim milk. A-2, p. 602; A-3, p. 260
9. Feeding calves on a limited amount of whole milk. A-3, p. 263
10. Raising calves on dry calf meals and a minimum amount of whole milk. A-2, pp. 605-608; A-3, p. 263; A-3, p. 268; B-56
11. Raising calves on nurse cows. A-2, p. 605
12. Importance of good hay for calves. A-2, p. 600
13. Feeding grain and other concentrates. A-2, p. 598; B-18, p. 9
14. Succulent feeds for calves. A-2, p. 601
15. Pasture for calves. A-2, p. 601; B-18, p. 13

16. Management practices in breeding and calving.
    a. Gestation period. A-4, p. 339; A-2, p. 570
    b. When to breed cows. A-4, p. 340
    c. Breeding efficiency. A-4, p. 340
    d. Sterility. A-4, p. 341
    e. Giving the cow a rest. A-4, p. 342; A-5, p. 320; A-4, p. 350
    f. Care of the dry cow. A-4, p. 343; A-5, p. 322
    g. Rations for the dry cow. A-5, p. 323; A-2, p. 569
    h. Care of the cow previous to calving time. B-18, p. 2
    i. Care of the cow at calving time. A-4, p. 343; A-2, p. 571
    j. Care of the cow after calving time. A-5, p. 326; A-2, p. 572
    k. Difficulties encountered following parturition. A-4, p. 345
17. Management practices in rearing dairy calves. B-17
    a. Precautions. A-2, p. 597
    b. Sanitation. A-3, p. 273
    c. Preventing growth of horns. A-3, p. 279
    d. Marking calves for identification. A-3, p. 282; B-18, p. 18
    e. Providing bedding for calves. A-3, p. 282
18. Proper development of heifers is important. B-19
    a. Nutrient requirements. A-2, p. 610
    b. Raising heifers on roughage alone. A-2, p. 611
    c. Feeding heifers from 6-12 months of age. A-2, p. 611
    d. Feeding heifers over one year of age. A-2, p. 612
    e. Concentrates for heifers. A-2, p. 613
    f. Roughages for heifers. A-2, p. 613
    g. Age for first calving. A-2, p. 614; B-18, p. 15
    h. Cost of rearing heifers. A-2, p. 616
    i. Normal growth standards. B-18, p. 21; A-2, p. 615; B-19

JOB 8. CONTROLLING AND PREVENTING DISEASES AND PARASITES

A. Teaching aims—To develop the ability of the farmer.
   1. To observe cattle closely to detect symptoms of disease.
   2. To prevent and treat the common ailments of dairy cattle.
   3. To carry out sanitary practices in and around the dairy barn.
   4. To keep livestock healthy.

B. References for this lesson—(see key list on pp. 17-19)
   1. (A)—4, 6,
   2. (B)—24, 39, 55
   3. (C)—3, 14, 15, 16

C. Suggested problems for study and discussion.
   1. General factors in the prevention and control of diseases. A-4, p. 388; C-3
   2. Fundamentals of disease and insect control. A-6, pp. 4-16; A-6, Part I, p. 109
      a. Losses caused by animal diseases and parasites. A-6, p. 4; A-6, pp. 109-116
      b. Causes of disease. A-6, p. 5; A-6, pp. 117-137
      c. Protective mechanisms against disease. A-6, p. 7; A-6, pp. 138-154
      d. The endocrine glands in health and disease. A-6, p. 9; A-6, pp. 155-166
      e. The relation of genetics to disease control. A-6, p. 10; A-6, pp. 167-174
      f. Artificial insemination in disease control. A-6, p. 10; A-6, pp. 175-178
      g. Disinfection and disinfectants. A-6, p. 11; B-24; A-6, pp. 179-187
      h. How research aids in disease control. A-6, p. 12; A-6, pp. 188-202
      i. Origin and spread of important insect pests of animals. A-6, p. 13; A-6, pp. 203-208
      j. Federal and State regulatory activities in animal disease control. A-6, p. 14; A-6, pp. 209-226; B-55
      k. Fighting disease with knowledge. A-6, p. 15; A-6, pp. 227-235
   3. Important diseases and parasites common to several species.
      a. Tuberculosis. A-6, p. 16; A-6, pp. 237-249
      b. Anthrax. A-6, p. 17; A-6, pp. 250-261; C-18
      c. Parasites and insects affecting livestock. A-6, p. 20
         (1) Cattle grubs. A-6, p. 51; A-6, pp. 612-619
         (2) Cattle lice. A-6, p. 53; A-6, pp. 631-635

(3) The stable fly. A-6, p. 52; A-6, pp. 620-625

d. Bacterial infections and parasites common to man and animals. A-6, p. 22
e. Nutritional diseases of farm animals. A-6, p. 54; A-6, pp. 645-672
f. Plants poisonous to livestock. A-6, p. 27; A-6, pp. 355-373
g. Paint poisoning in cattle. A-6, pp. 642-644

4. Common diseases of cattle.
   a. Bang's disease. A-6, p. 40; A-6, pp. 501-511; C-15
   b. Foot rot, hoof rot, or foul foot. A-4, p. 397; A-5, p. 379; B-39, p. 33
   c. Mastitis. A-6, p. 42; A-6, pp. 518-522; C-14
   d. Black leg. A-6, p. 43; A-6, pp. 523-525; C-16
   e. Shipping fever. A-6, p. 43; A-6, pp. 526-532
   f. Milk fever. A-6, p. 43; A-6, pp. 533-536
5. Miscellaneous diseases of cattle. A-6, p. 44; A-6, pp. 537-564
   a. White scours. A-6, p. 44; A-6, pp. 537-540
   b. Common warts. A-6, p. 45; A-6, pp. 543-546
   c. Cattle coccidiosis. A-6, p. 47; A-6, pp. 565-571
   d. Trichomoniasis. A-6, p. 50; A-6, pp. 605-611

In leading the discussion on any one of the above diseases, or others, it will frequently be desirable to make an introductory statement similar to the following, for example: Bang's disease—a chronic insidious infection of cattle of both sexes that affects largely the organs of reproduction. It is widespread and economically important, largely through reduced milk production, the loss of calves by premature birth, and sterility. In cattle it is known as Bang's disease or contagious abortion. In man it is known as "Malta fever", "Mediterranean fever", and "Undulant fever". A new method of calf-hood vaccination has become a weapon in the nation-wide campaign to eradicate the disease.

Teachers should then endeavor to conduct the discussion on the diseases of importance to the group from the point of view of, (a) causes (direct and indirect), (b) symptoms, (c) recommended control procedure, (d) handling of the affected animals, (e) handling the remainder of the herd and (f) treatment and prevention. Draw from the group, experiences individual members have had in the handling of specific diseases. The 1942 Yearbook of Agriculture "Keeping Livestock Healthy" is a splendid reference.

Generally, it would be desirable to invite the local veterinarian to help lead the discussions in this lesson. His knowledge, training and experience should enable him to make valuable contributions toward the solution of problems that many dairymen have with respect to handling the several diseases, parasites, and ailments of dairy cattle.

JOB 9. PRODUCING CLEAN MILK

A. Teaching aim—To develop the ability of the farmer

1. To produce high quality milk economically.

B. References for this lesson—(see key list on pp. 17-19)

1. (A)—3, 4
2. (B)—25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 53
3. (C)—5, 6, 7

C. Suggested problems for study and discussion

1. Producing high quality milk and cream on the farm. B-25; B-26; B-27; B-28; C-5; C-7
2. Essentials in clean milk production. B-26; B-29; B-37; B-53
3. Preventing objectionable flavors and odors in milk. A-4, pp. 328-332; B-29
4. Caring for milk on the farm. A-3, p. 239
5. Caring for cream on the farm. A-3, p. 245
6. Cooling milk and cream on the farm. B-32; B-33; B-34
7. Milk houses. B-30; B-31; C-6
8. Caring for milk utensils on the farm. B-35
9. Cleaning milking machines. B-36
10. Marketing milk from the farm. A-3, p. 248
11. Marketing cream from the farm. A-3, p. 250

JOB 10. CARE AND MANAGEMENT OF THE DAIRY HERD

A. Teaching aims—To develop the ability of the farmer
   1. To care for the details in dairy herd management
   2. To do the various jobs necessary for producing milk efficiently.

B. References for this lesson—(see key list on pp. 17-19)
   1. (A)—2, 3, 4, 5
   2. (B)—21, 22, 23, 39, 42
   3. (C)—11

C. Suggested problems for study and discussion—
   1. Considering the importance of proper management. A-5, p. 303; B-39
   2. Regularity and gentleness of handling is essential to economic milk production. A-5, p. 303; A-2, p. 566; A-2, p. 568; A-4, p. 335
      a. Care in milking. A-4, p. 348; B-42
   3. Considering the importance of health and appearance.
      a. Grooming and exercise. A-5, p. 304; A-4, p. 336
      b. Trimming hoofs—trimming horns. A-4, p. 336
      c. Dehorning. A-4, p. 338; A-5, p. 306
   4. Providing suitable shelter and comfort. A-5, p. 311; A-2, p. 564
      a. Requirements of a satisfactory dairy barn. A-4, p. 402
         (1) Light. A-4, p. 411
         (2) Ventilation. A-4, p. 411; B-21
         (3) Convenience. A-5, p. 480
      b. Remodeling the barn for a dairy herd. B-22; C-11
      c. Providing bedding. A-4, p. 419
   5. Providing dairy barn equipment. A-3, p. 418; B-23
      a. Providing water in the barn. A-5, p. 329
      b. Economy of milking machines. A-4, p. 362
      c. Labor saving devices. B-23
      d. Providing protection against flies. A-4, p. 353; A-5, p. 313
   6. Prevent contamination of water, hay, silage and pasture with cattle droppings.

IV. SUGGESTED REFERENCE MATERIAL

Books (A)

1. U.S.D.A., Food and Life, Yearbook of Agriculture, 1939
2. Morrison, Feeds and Feeding, Morrison Pub. Co., Ithaca, N. Y. 1937
3. Yapp and Nevins, Dairy Cattle, J. Wiley & Sons, Inc., N. Y. 1941
4. Petersen, Dairy Science, J. B. Lippincott Co., Phila, Pa. 1939
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2. Raising the Dairy Calf. Film Strip, Series 378, U.S.D.A.
3. Keeping Livestock Healthy. Film Strip, Series 246, U.S.D.A.
4. Judging Dairy Cattle. Film Strip, Series 256, U.S.D.A.
5. The Production of Clean Milk. Film Strip, Series 175, U.S.D.A.
6. Farm Dairy Houses. Film Strip, Series 140, U.S.D.A.
7. Some Methods of Estimating Milk Quality by Bacterial Tests. Film Strip, Series 170, U.S.D.A.
8. Feed samples. (Concentrates, supplements, hay, silage)
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10. Dairy Outlook Charts. U.S.D.A.
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12. Green Acres, Colored 16mm movie (sound) Nat. Fertilizer Asso., Washington, D. C.
13. Improve Pastures. Chart 15, Nat. Fertilizer Asso., Wash., D. C.
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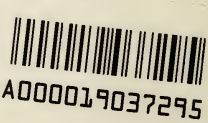
19. Materials from Dairy Cattle Breed Associations. See addresses in De Laval Diary
20. Dairy Cattle Breed Journals

V. SUGGESTED APPROVED PRACTICES WHICH SHOULD DEVELOP FROM THE COURSE

1. Increase the production of milk efficiently.
2. Develop an understanding of the problems confronting the dairy farmer in meeting the demands for the increased production of milk.
3. Determine the food requirements of dairy cows.
4. Determine the amount of feed necessary for economic milk production.
5. Home-mix and prepare rations.
6. Purchase supplemental feeds and rations in accordance with the quantity and quality of home-grown feeds.
7. Feed dairy cows in accordance with their food requirements.
8. Feed dairy cows economically.
9. Practice good pasture management.
10. Use pasture for efficient feeding.
11. Use a good sire and breed him to the best cows, practicing the best principles of improving the dairy herd through breeding.
12. Select high producing cows with good type, and eliminate the low-producing individuals.
13. Raise calves out of high producing dams of good type, and from sires of known breeding.
14. Feed and manage growing stock for maximum development as herd replacements.
15. Prevent and control diseases and parasites of dairy cattle by recognizing common symptoms early.
16. Use approved control measures.
17. Produce high quality milk and cream efficiently.
18. Market high quality milk and cream.
19. Use approved herd management practices.
20. Manage the dairy herd efficiently for increased production.



Aaron Bldg.

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